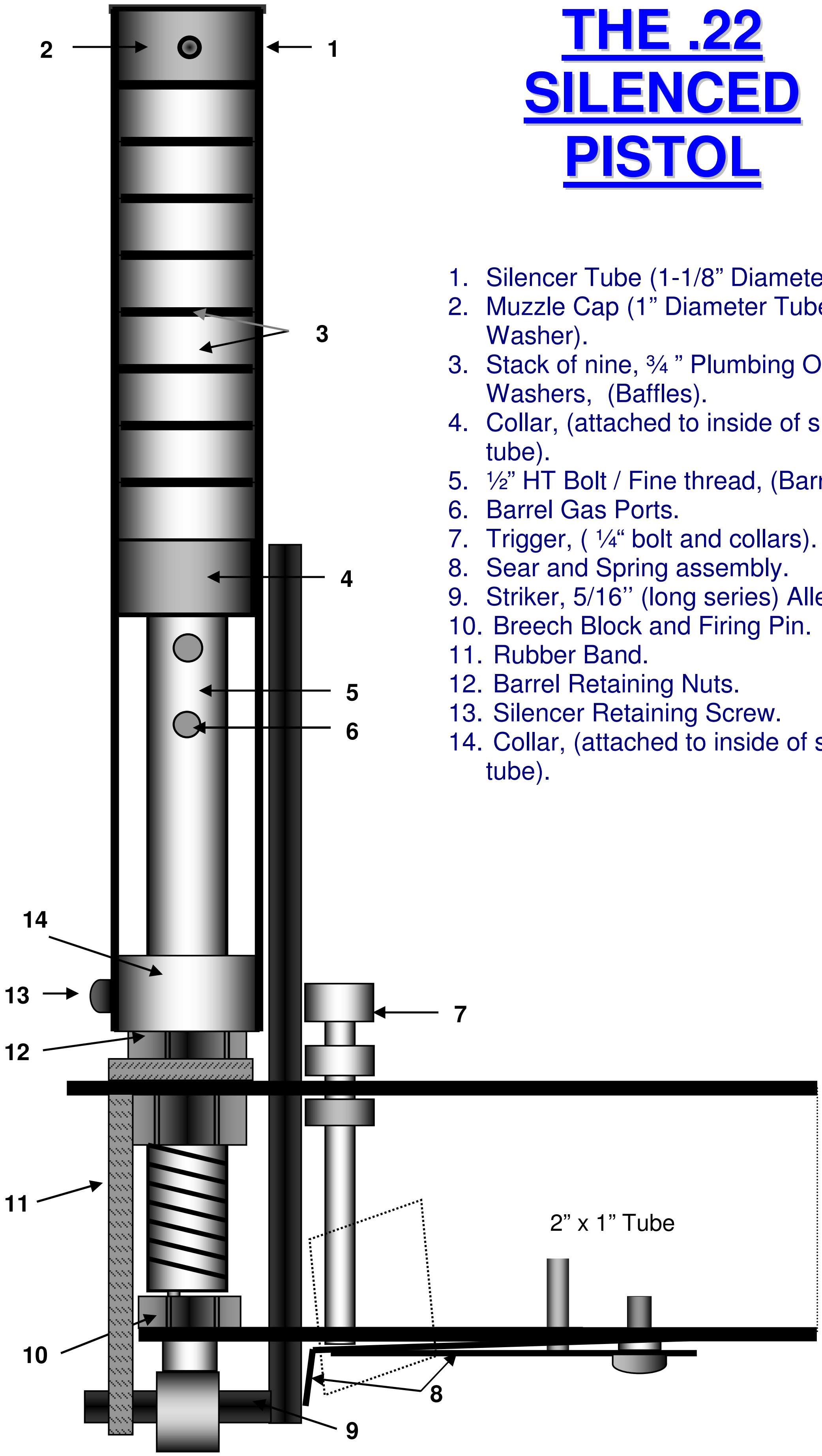
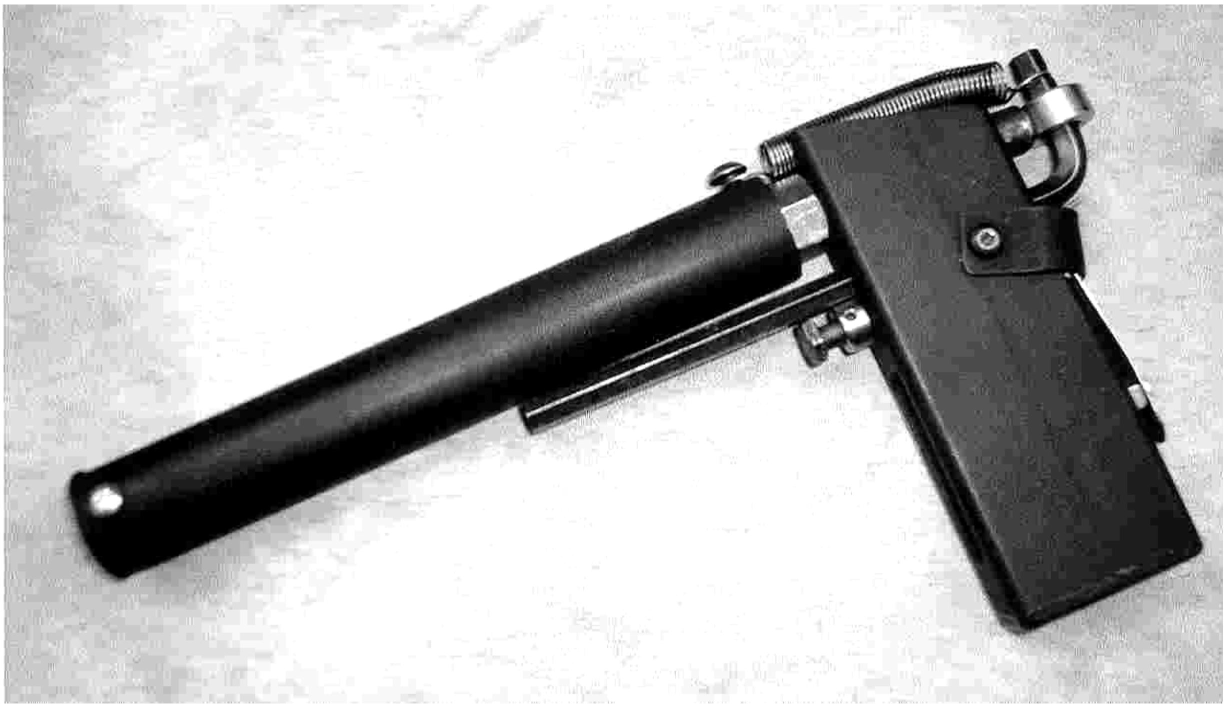
THE .22 SILENCED PISTOL

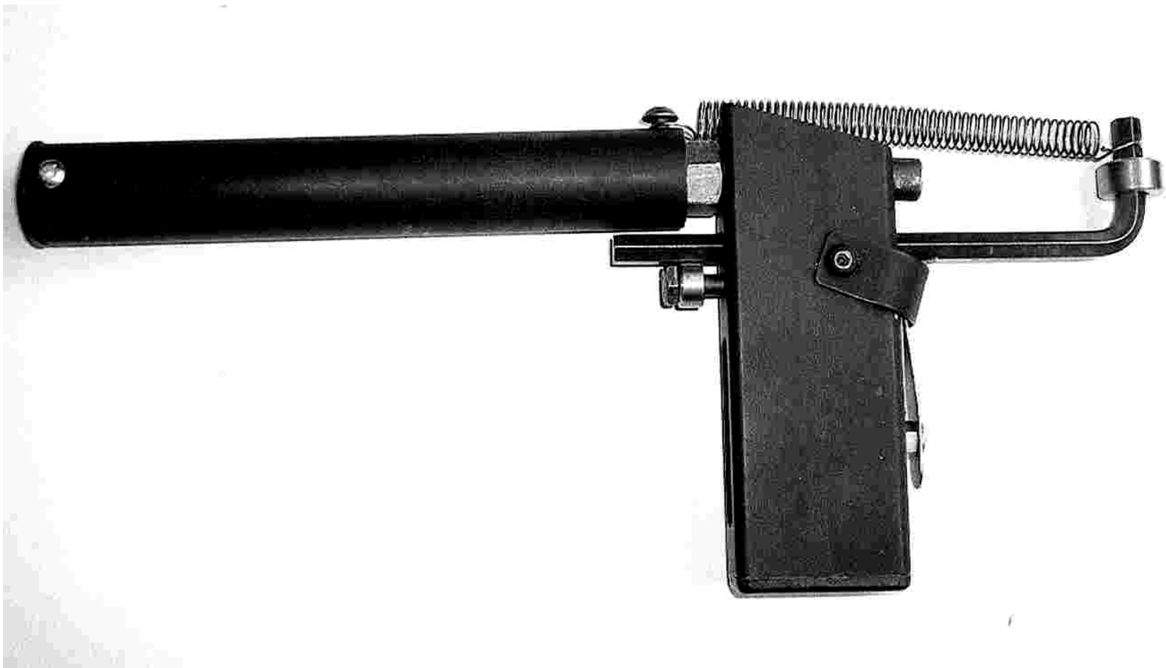


1. Silencer Tube (1-1/8" Diameter)
2. Muzzle Cap (1" Diameter Tube and Washer).
3. Stack of nine, ¾ " Plumbing Olives and Washers, (Baffles).
4. Collar, (attached to inside of silencer tube).
5. ½" HT Bolt / Fine thread, (Barrel).
6. Barrel Gas Ports.
7. Trigger, (¼" bolt and collars).
8. Sear and Spring assembly.
9. Striker, 5/16'' (long series) Allen Key.
10. Breech Block and Firing Pin.
11. Rubber Band.
12. Barrel Retaining Nuts.
13. Silencer Retaining Screw.
14. Collar, (attached to inside of silencer tube).

.22 Pistol Photo Gallery



Fully Assembled



Cocked and ready to fire!



Close up of the striker and breech block



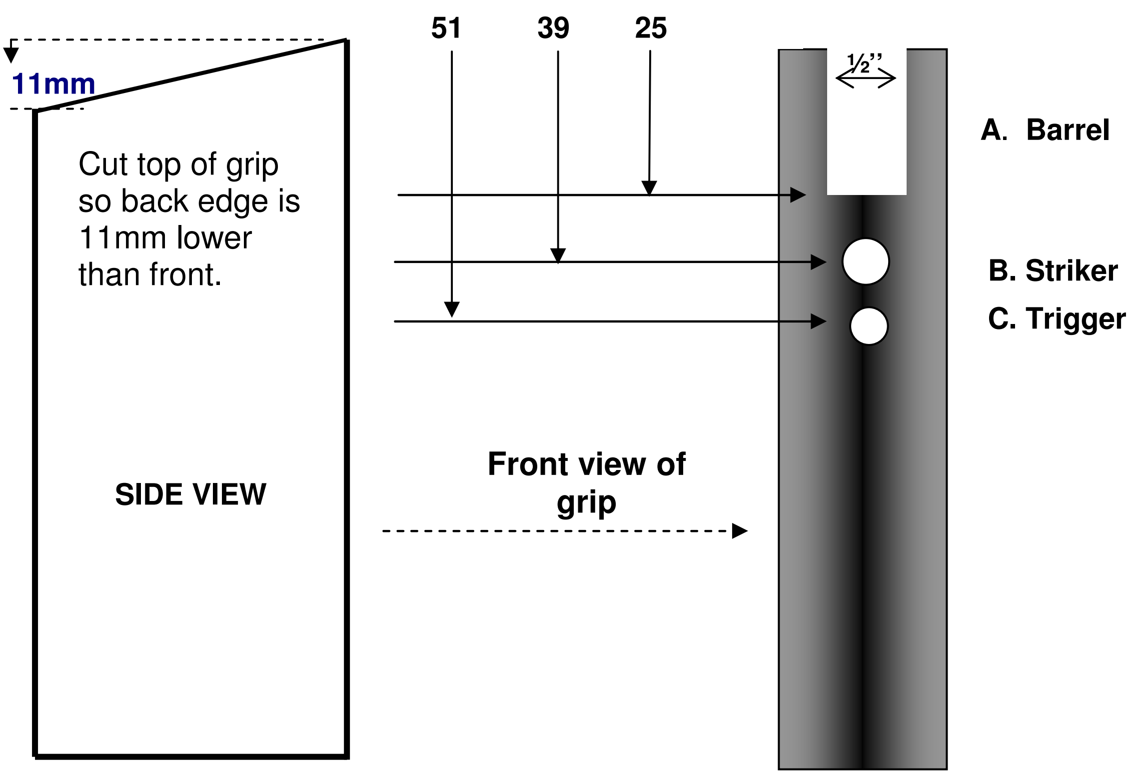
A long drawn out view!

GRIP CONSTRUCTION

(FRONT WALL MEASUREMENTS)

The grip acts as the receiver for all of the pistols component parts.
It must be modified by cutting three holes into the grip front wall to the measurements supplied below.
The grip consists of a 5-1/8" length of 2'' x 1'' tubing. The wall thickness of the tube should be 2.5mm.
The holes are drilled to the following diameters: **A**= ½" (cut with hacksaw), **B**=5/16'', **C**= ¼". The upper most recess, **'A'**, is cut through one wall of the tube only. Holes **'B'** and **'C'** are drilled through both tube walls. Remove any burs from inside of the grip with a file.

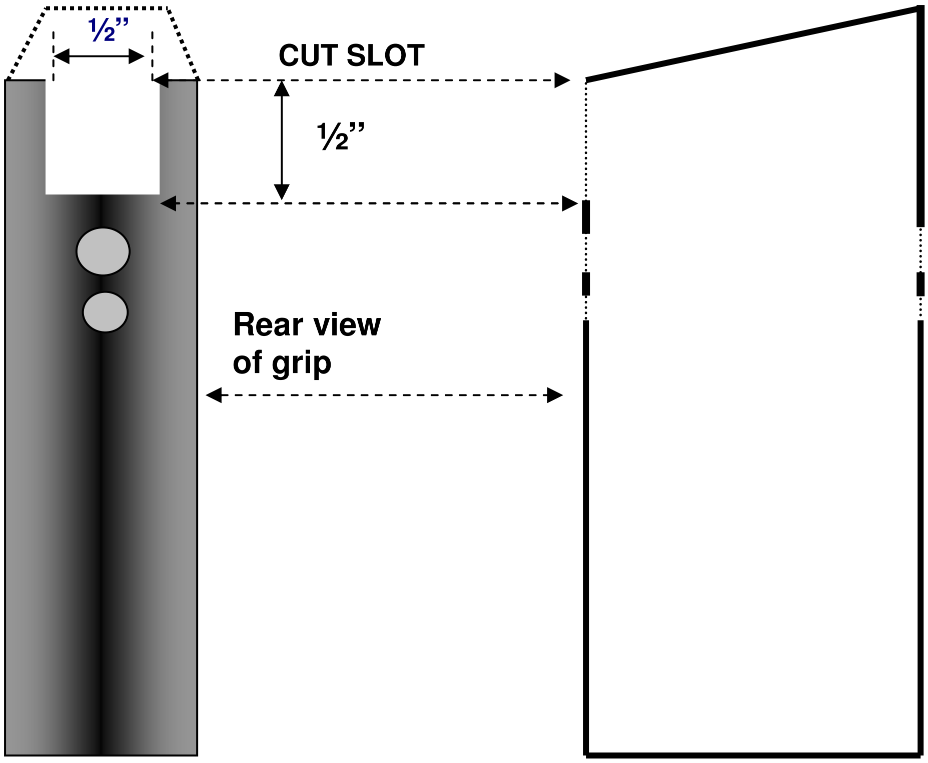
(Measurements in millimetres unless specified)



It is now necessary to modify the rear of the grip so it will accept the breech block.

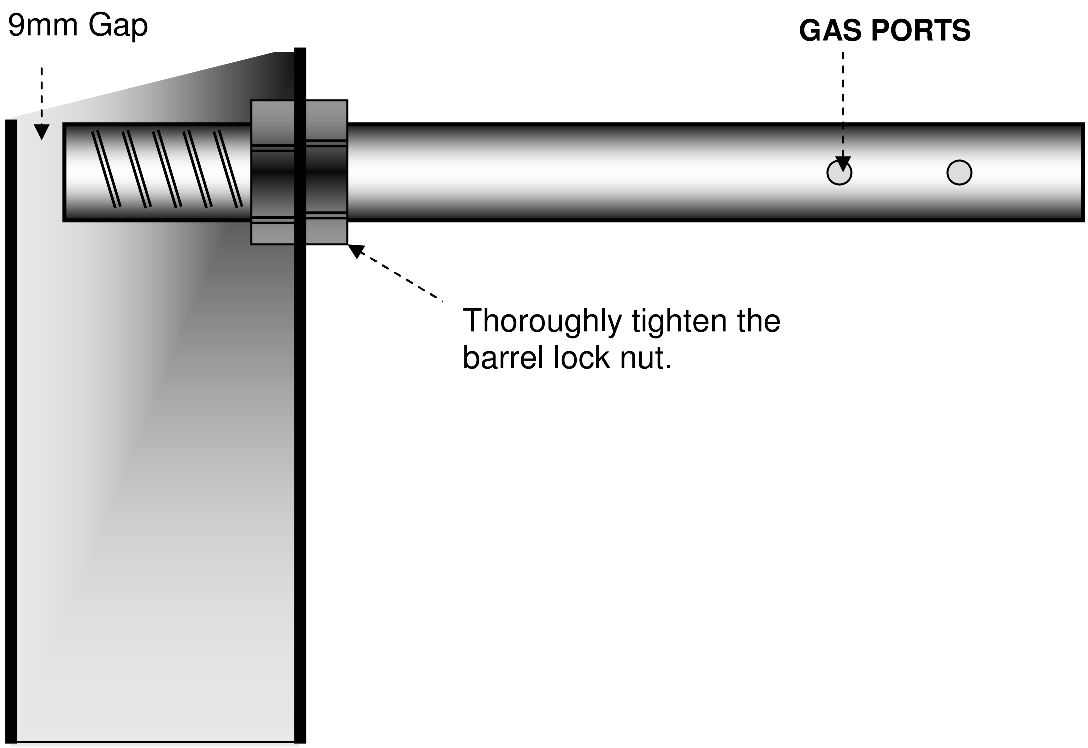
GRIP CONSTRUCTION
(REAR WALL MEASUREMENTS)

A slot measuring ½ " x ½ " is cut into the top rear of the grip to form the recess for the breech block, as shown below.



FITTING THE BARREL

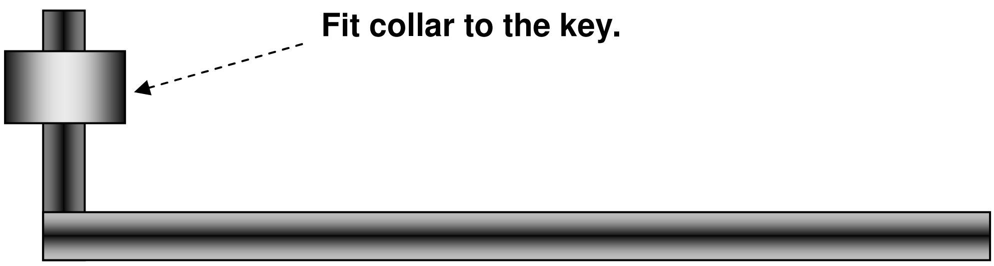
With the necessary modifications made, the grip can be fitted with all the internal working parts. We will start by fitting the barrel.
The barrel is made by modifying a 6” x ½” high tensile bolt. The bolt should have a minimum thread length of 2”. It may be necessary to increase the thread length using a thread cutting die if a bolt cannot be found with a 2” thread. The bolt head is first removed and the bolt trimmed to an overall length of 5 ½”.
The bolt is bored out to form a bore diameter of 5.5mm. The chamber is cut using a 5.8mm drill, or a .22 chamber reamer, if available. Ideally, a section of .22 rifled barrel could be used, if fitted with a suitable thread.
After machining the bore to the correct diameter, the improvised barrel is inserted into the barrel recess and bolted to the grip using two nuts. The outer nut being a flange nut, if available. Flange nuts seem hard to come by but an ordinary nut will suffice.
With the barrel fitted, a gap of 9mm should exist between the breech face of the barrel and the inner wall of the grip. This gap will accept the breech block in due course. If necessary, the gap can be increased or decreased by adjusting the barrel lock nuts. Any adjustment will not be required until the breech block is fitted.
Two holes, 3.5mm in diameter, are now drilled through the barrel in the positions shown below. The first hole is drilled 1 ¼” from the muzzle. The second hole, 2 ¼” from the muzzle. The holes should be in as accurate alignment with the bore as possible. These two holes act as gas ports to allow the barrel to be fitted with a homemade integral silencer.

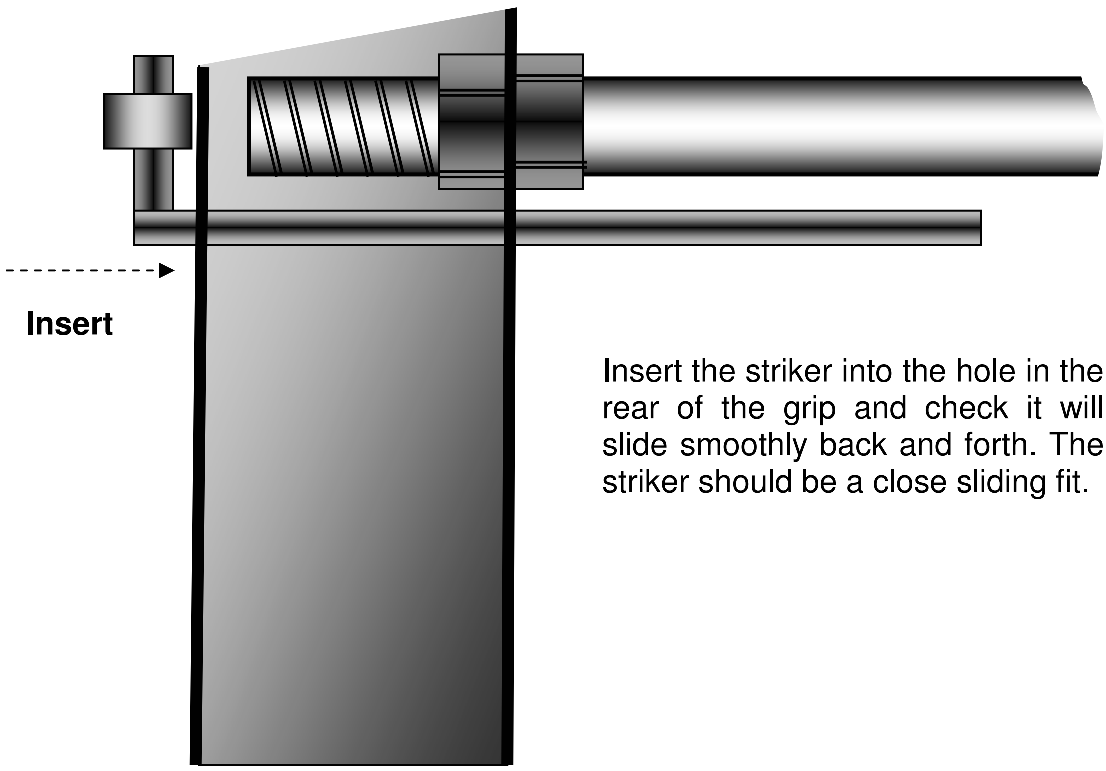


With the barrel fitted we can proceed and fit the striker assembly.

STRIKER ASSEMBLY

The striker consists of a modified 5/16'' (8mm) diameter 'long series' Allen Key.
The first step is to slide a 3/8'' steel collar onto the key and thoroughly tighten the collars grub screw to prevent it from moving. The exact position of the collar will not be known until after the breech block has been fitted.
Though reasonably common, if a long series key is unavailable an ordinary 3/8" high tensile bolt, 8" in length, may be used to construct the striker. The bolt head is removed and the bolt heated to a bright red colour at a point 1 ½" from it's end. The bolt is then bent into a right angle at this point. It is then fitted with a collar as described above.

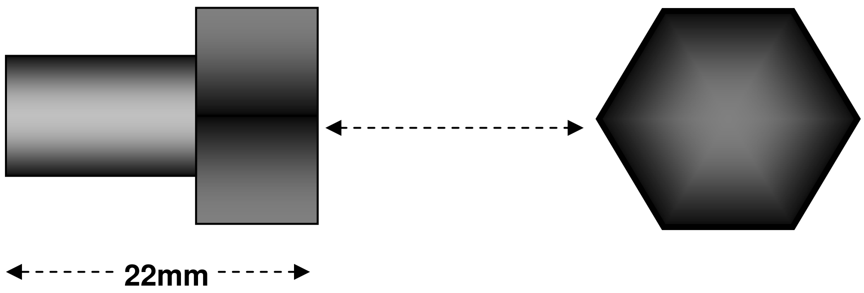


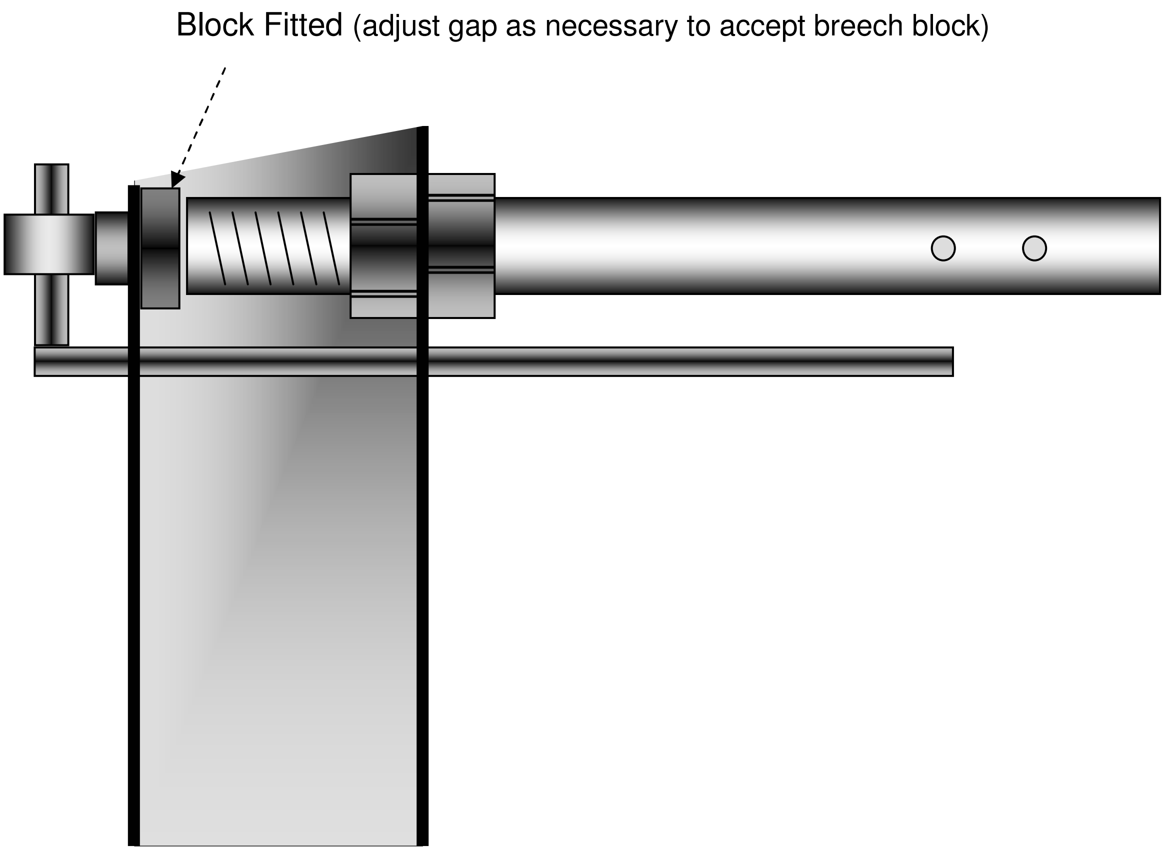


Insert the striker into the hole in the rear of the grip and check it will slide smoothly back and forth. The striker should be a close sliding fit.

BREECH BLOCK

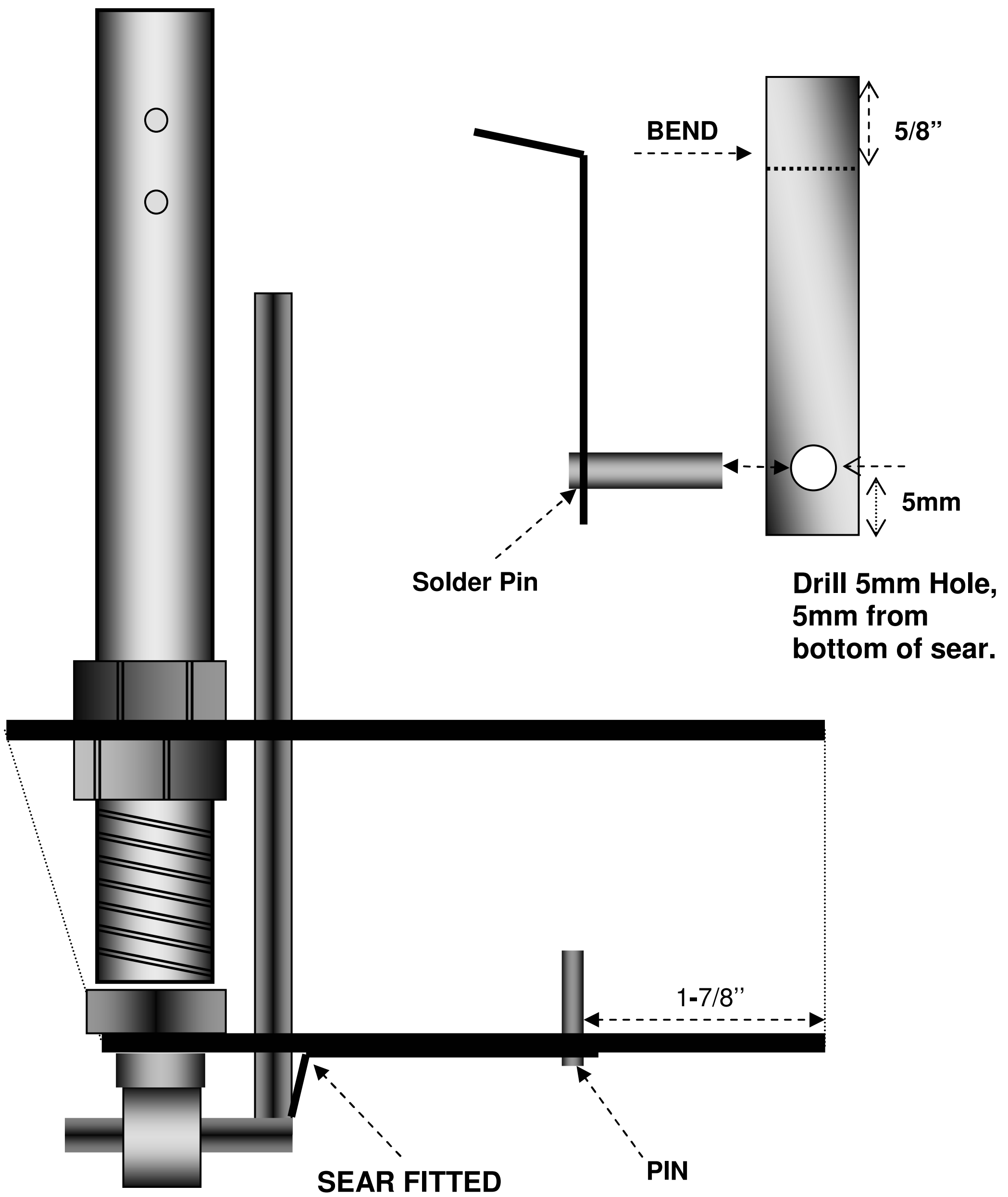
The breech block is made from the head section of a ½" diameter bolt; the bolt being of the standard hexagon head variety. The bolt section should be 22mm in length but a millimetre more or less is close enough. The block is fitted with a fixed firing pin consisting of a short section of 3mm diameter drill shank. This will be fitted later, (*See Page 10*).





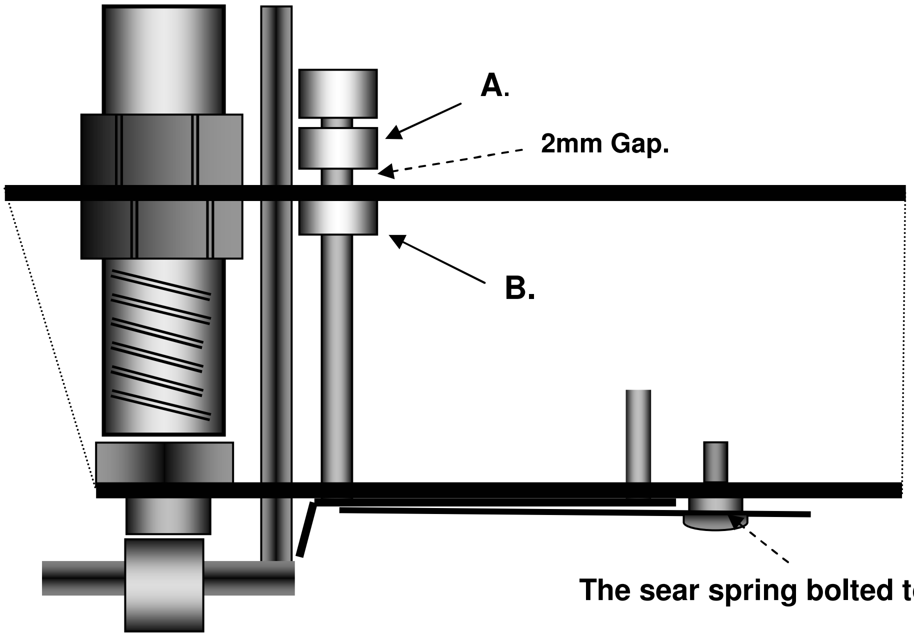
THE SEAR

The sear is nothing more elaborate than a 2 ¼" length of ½" x 14 gauge (2mm) steel strip, formed initially to the shape of the drawing below. A 5mm diameter hole is drilled through the sear, 5mm from it's lower edge. A steel pin is now inserted into the hole and retained with silver solder. Alternatively, a spring pin may be used.
The sear is attached to the grip by drilling a hole, 5.5mm in diameter and 1-7/8" from the grips lower edge. The sear pin is inserted into this hole.
When fitted, the sear should be pressing upwards against the underside of the striker. Carefully bend the sear as necessary to achieve this. Careful hand fitting will be required. Once any adjustments have been made, the sear must be hardened using the simple case hardening process described on page 17.
When the striker is pulled back to cock the pistol, the sear will engage with a 'V' shaped groove cut into the underside of the striker. We will cut this slot later.



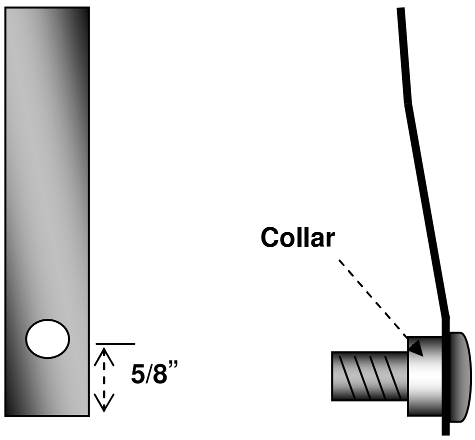
FITTING THE TRIGGER AND SEAR SPRING

The trigger is assembled from a 6mm (or ¼”) diameter bolt and two steel collars. The trigger length is 67mm (2-5/8”) and although about right for the average size hand the length may be altered to suit personal requirements. The trigger must be fitted first, that is, before any of the other component parts.
First, slide collar ‘**A**’ onto the bolt and insert this assembly into the hole in the front of the grip. Place the second collar **‘B’** *inside* the grip (from the top) and slide this collar onto the bolt. Push the trigger back until it *just* touches the sear, and then adjust collar **‘B’** so it is touching the *front inner wall* of the grip. Now tighten the collars screw.
The trigger, when pulled, should only move back a distance of 2mm, so adjust the collar on the outside of the grip so a gap of this measurement exists between the collar and grip wall.



The sear spring bolted to the grip

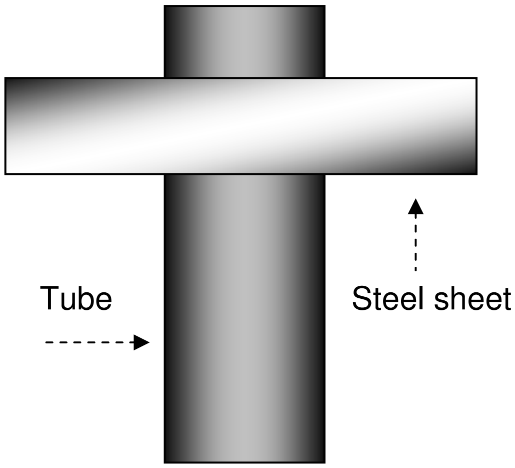
The sear spring consists of a 2-3/8” length of ½” x 22 gauge spring steel strip. A 6mm diameter hole is drilled through the spring, 5/8” from one end. In order to attach the spring to the grip, a smaller 5mm hole is drilled 1-3/8” from the grips lower edge. This hole is then tapped to accept a 6mm diameter socket screw.
The socket screw is inserted into the spring followed by a 6mm collar.

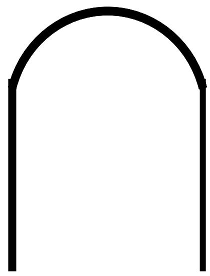


The sear spring, screw, and nuts, shown in their correct assembly positions.

SEAR SHIELD

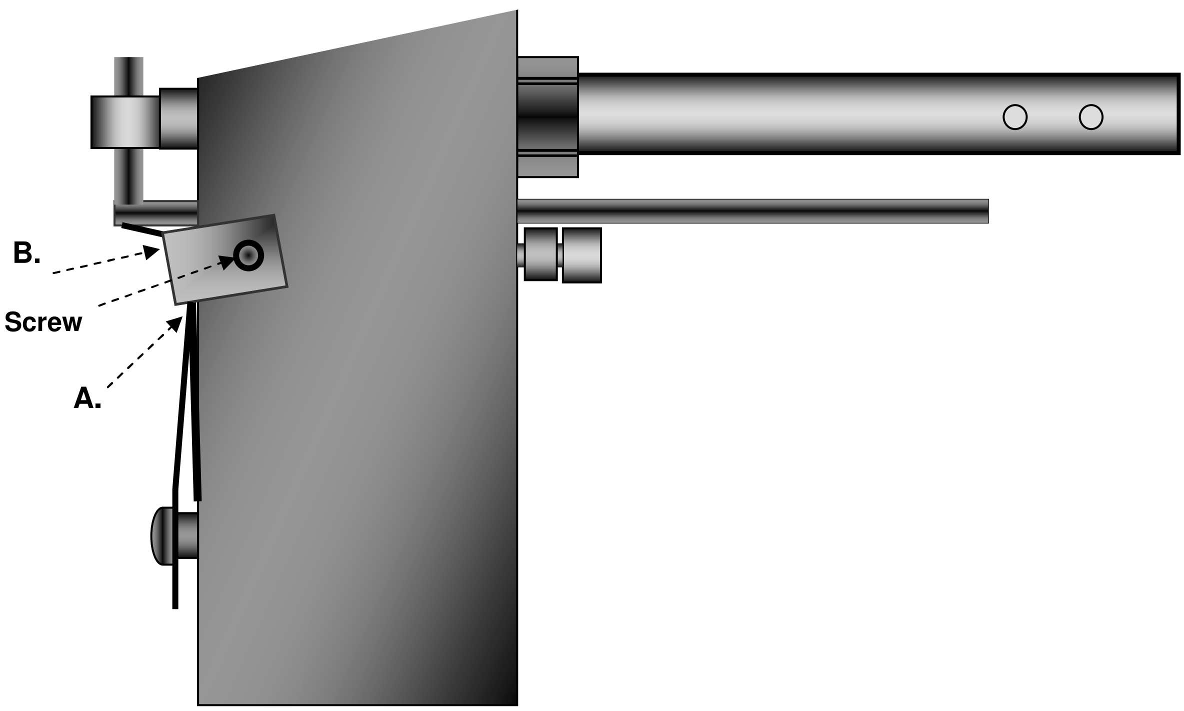
Now that we have successfully fitted the sear and trigger, it is necessary to fit the sear shield. The shield prevents the web of the shooters hand interfering with the correct functioning of the sear. The shield is nothing more than a small strip of 20 gauge steel sheet, measuring 3 ¼" x 5/8", bolted to the grip by two socket screws. Tap each hole to accept the screws. The steel sheet is first formed into an arch shape by simply bending it around a length of 1" diameter tubing, as illustrated below.





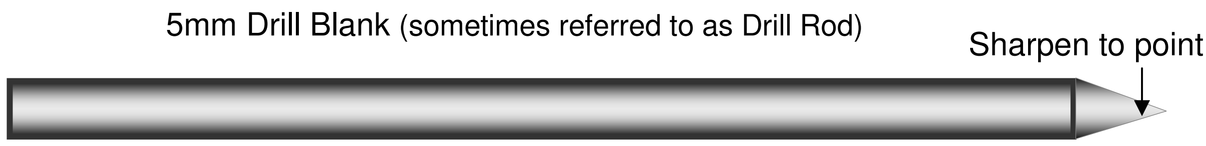
Bend the sheet to the above shape.

The sear shield is attached to the grip, as shown below.
A gap should exist between the rear of the grip and the inside wall of the shield to allow the sear to move. The gap at point 'A' should be about 5mm, and point 'B' 10mm.



FIRING PIN

Before we fit the simple striker 'spring', we can fit the firing pin to the breech block. The firing pin is attached permanently to the block and consists of the shank section of a 3mm diameter drill. The pin will require trimming to the correct length before it is retained using bearing adhesive. These measurements are given on the following page.
First, we must mark the breech block so the firing pin is fitted in the correct position to detonate the .22 rimfire cartridge. It is vitally important to be careful in our measuring at this stage. If we drill our firing pin hole in the wrong position it will be necessary to make another breech block, so ''careful'' is the key to success.
In order to mark the position of the firing pin we will require a drill blank (*), 6" in length and 5.5mm in diameter. If 5.5 is unavailable, a 5mm may be used. Drill blanks are available from most good 'Nut and Bolt' suppliers. One end of the drill blank is carefully made into a point. This is most accurately achieved using a lathe, but a bench grinder, in conjunction with a drill sharpening guide, could be used.



MARKING THE BLOCK

With the breech block fitted to the pistol, ensure the breech block is in its lower most position by placing finger pressure on top of the block. Slide the pointed drill blank into the barrel (pointed end first) until the drill blank comes to a stop against the block. Lightly tap the end of the drill with a hammer.

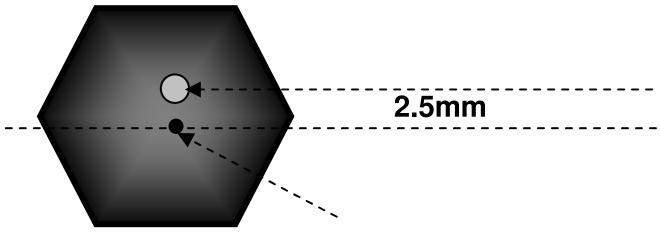


Barrel with drill blank inserted.

(*) A 'drill blank' is a drill bit with no cutting edges.

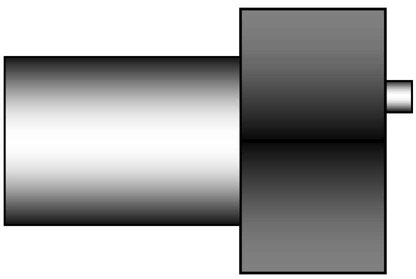
DRILLING THE PIN HOLE

Now remove the breech block. The block will be marked with a small indentation ‘**A**’. An accurate form of measuring will be required for the next step, such as a vernier gauge. From the position of the indentation, measure upwards (towards the top of the block) a distance of 2.5mm (3/32”). Using the pointed drill blank, punch another mark, ‘**B**’. This is the position at which to drill the firing pin hole. The hole should be drilled to a diameter of 3mm.



FITTING THE PIN

As pointed out earlier, the firing pin consists of a section of 3mm drill shank.
The pin requires no modification, other than to its length. Drill the firing pin hole to a specific depth, for example, 7mm. The firing pin should be 1.5mm longer (8.5mm) than the hole. As a result, the pin will protrude from the block face by 1.5mm when fitted.
When we are sure the pin is trimmed to the correct length, apply a drop of bearing adhesive to the hole and insert the pin. Leave the assembly, with the pin pointing skywards, for about thirty minutes for the adhesive to harden.



Side view of breech block with firing pin fitted.

SILENCER CONSTRUCTION

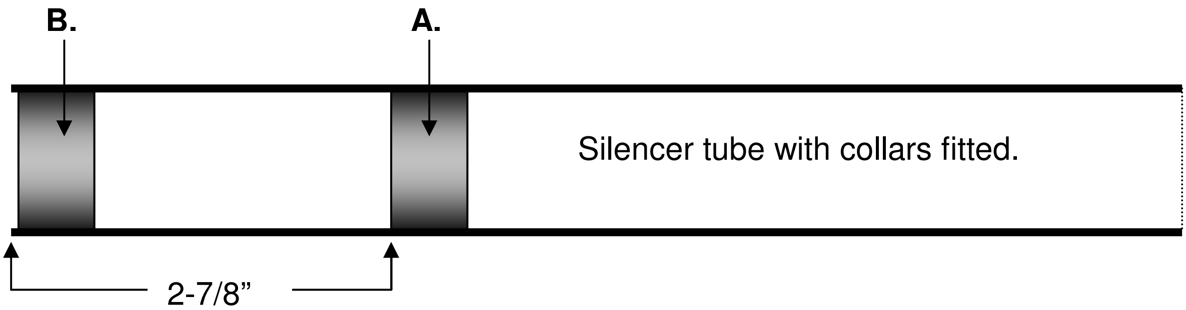
Now that the pistol is almost fully assembled we can begin to assemble the silencer. The silencer is of very simple design, but no less effective for that.
The silencer wraps around the entire barrel in 'integral' fashion, rather than just screwing onto the end of the barrel. This allows a more compact pistol design.
The silencer is constructed from a 7¼" length of 16 gauge steel tubing. Seamless tubing is preferable. The silencer baffles consist of a 'stack' of nine 22mm (¾") brass plumbing olives. These are the measurements supplied on the packet, but their actual diameter is 25mm. Nine 1'' diameter washers, having a hole diameter of ¼" are also required.
Both products are readily available from any good hardware or plumber's merchant.
Two steel collars are also required as a means of attaching the silencer to the barrel. A collar having a ½" bore will usually have an outside diameter of 1". The ½" collar will, therefore, be a perfect fit when fitted over the barrel, and, be a snug fit inside the silencer body. If the appropriate size of collar cannot be located ''off the shelf'' they will need to be turned from a section of 1" diameter steel bar.

FITTING THE COLLARS

Drill 6mm diameter hole, 7mm from end of tube.

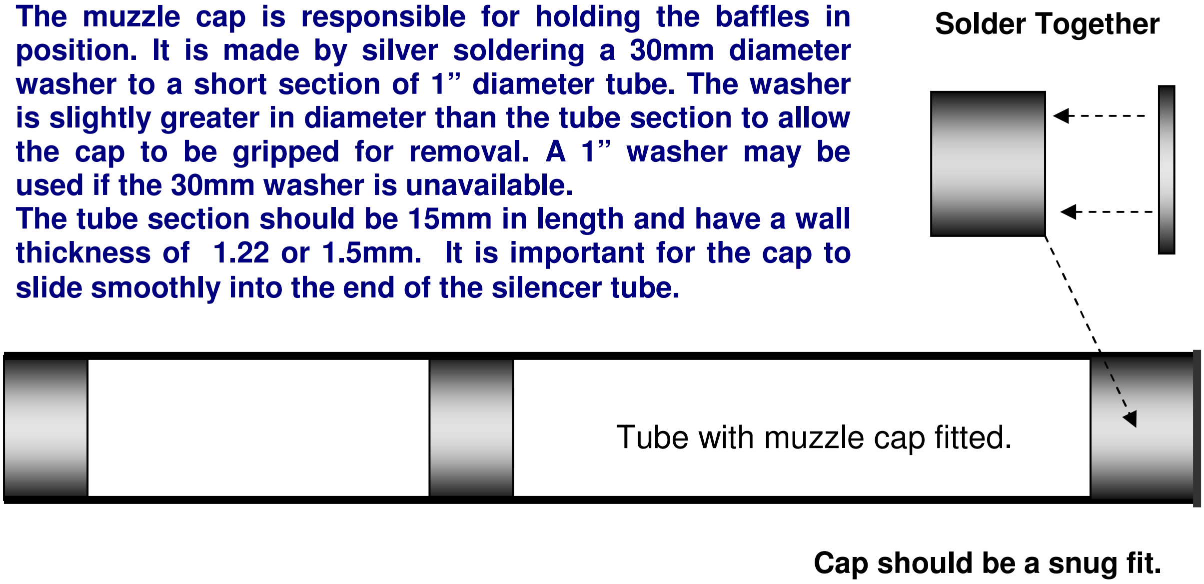


Position collar 'A' so it is 2-7/8" from the end of the tube. Position collar 'B' so it is 1mm below the end of the tube. Both collars are retained with high strength bearing adhesive. When fitting collar 'B' make sure that the collars grub screw has been *removed* first, and that the vacant hole is in accurate alignment with the 6mm hole we drilled above. Leave this assembly for about thirty minutes for the adhesive to harden, and then remove any surplus adhesive from the inside of the tube with a cloth.
A socket screw, with a thread length of 3/8", is now screwed into this collar and enables the silencer to be securely attached to the barrel.



FITTING THE MUZZLE CAP

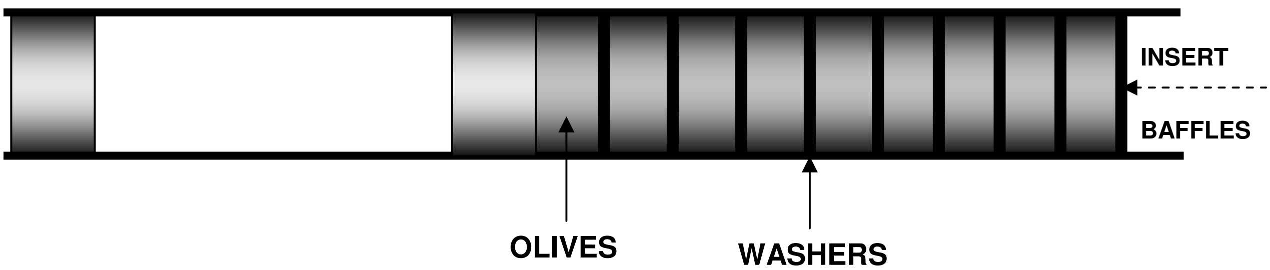
The muzzle cap is responsible for holding the baffles in position. It is made by silver soldering a 30mm diameter washer to a short section of 1" diameter tube. The washer is slightly greater in diameter than the tube section to allow the cap to be gripped for removal. A 1" washer may be used if the 30mm washer is unavailable.
The tube section should be 15mm in length and have a wall thickness of 1.22 or 1.5mm. It is important for the cap to slide smoothly into the end of the silencer tube.



The muzzle cap is now inserted into the silencer tube to ensure it will slide in smoothly.

INSERTING THE BAFFLES

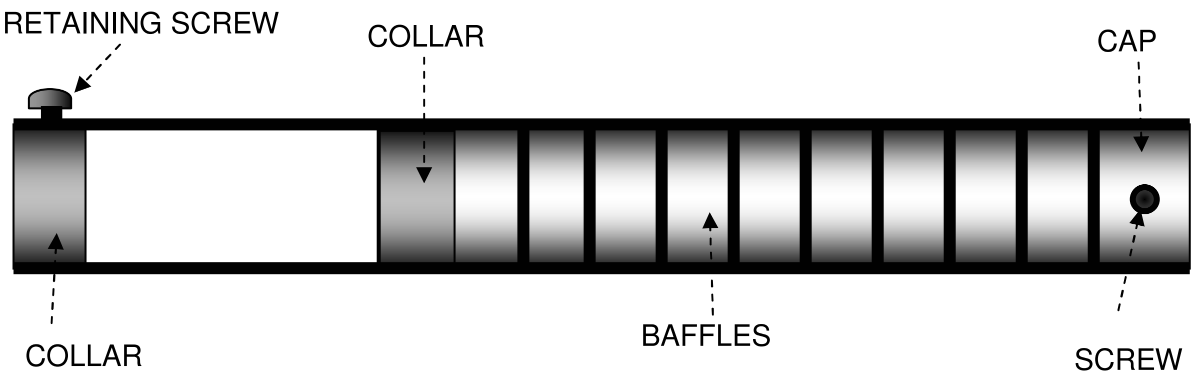
The baffles consist of a stack of nine 22mm (¾") brass plumbing olives and nine 1" diameter washers with ¼" diameter holes. As pointed out earlier, the olives are actually 1" diameter. Remove the muzzle cap and stack the baffles in the order they are shown below. Insert the stack of baffles into the silencer.



Now refit the muzzle cap.

THE ASSEMBLED SILENCER

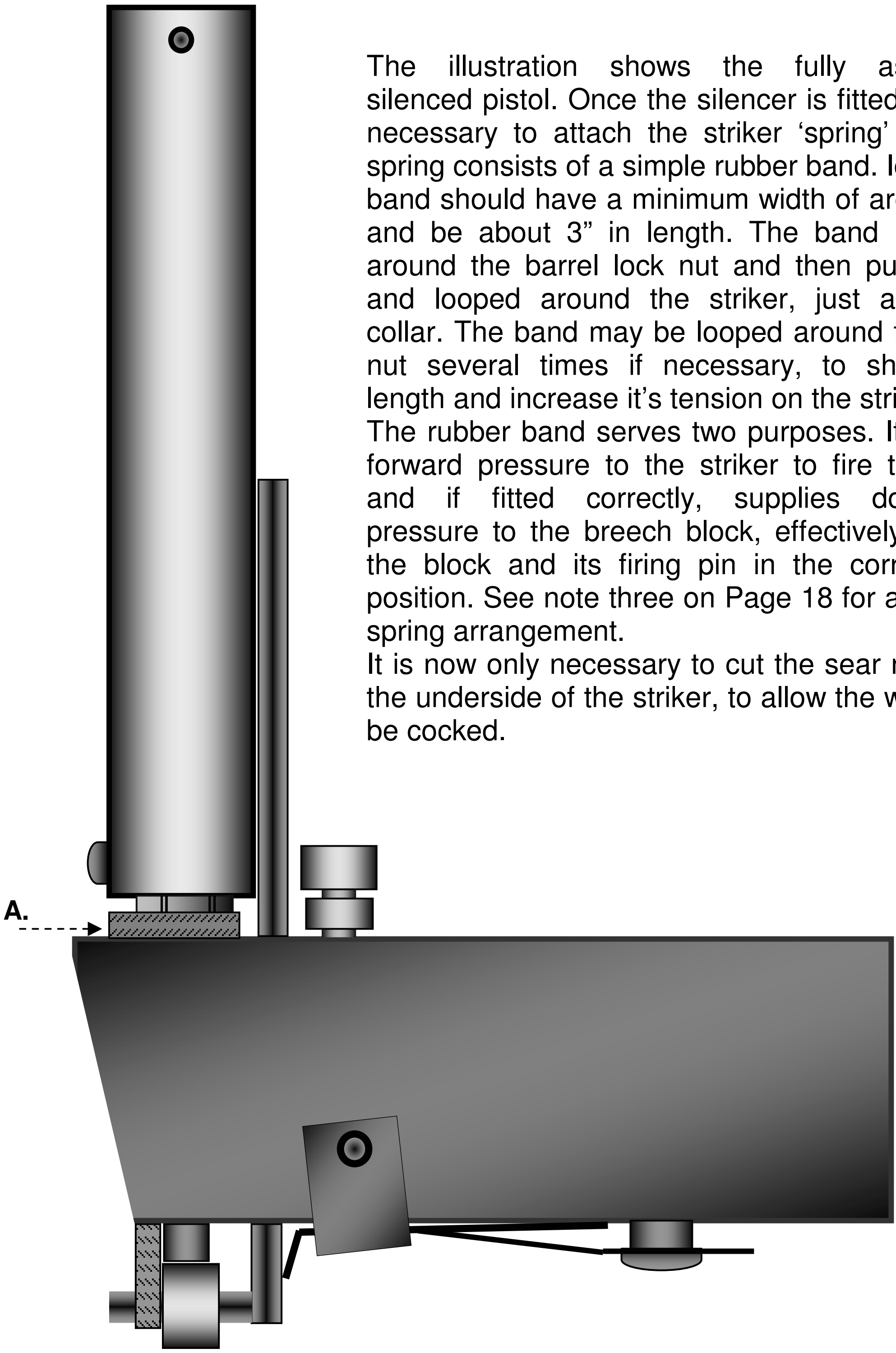
With the muzzle cap fitted, it is only necessary to drill a 3mm diameter hole through each side of the silencer wall and *through into the muzzle cap*. The holes are positioned 7mm from the end of the tube. The cap should then be *removed* and the diameter of the two holes in the *silencer body* increased to 4mm. A 4mm diameter self tapping screw will then screw into each *3mm hole* securing the cap in position.
It is preferable to fit the two screws at the nine and three o'clock positions, in relation to the silencer retaining screw being at the twelve o'clock position.
As a simpler alternative to using the screws mentioned above, the cap can be retained using bearing adhesive, making the drilling of any holes unnecessary.
It should be noted, however, that the cap will require removal every 100 or so shots to permit the cleaning of the baffles. This will require that the cap is heated with a gas torch to melt the adhesive and allow the caps removal. The cap will then require cleaning to remove all the old adhesive before re-fitting the cap.



The silencer can now be fitted to the pistol.

FITTING THE SILENCER

We are now ready to fit the silencer to the pistol barrel. This is a quick and simple procedure. Slide the silencer onto the barrel and push it back until it comes to a stop against the barrel lock nut. Position the silencer so the retaining screw is at the 12 o'clock position, and then firmly tighten the screw. The silencer is now fitted.



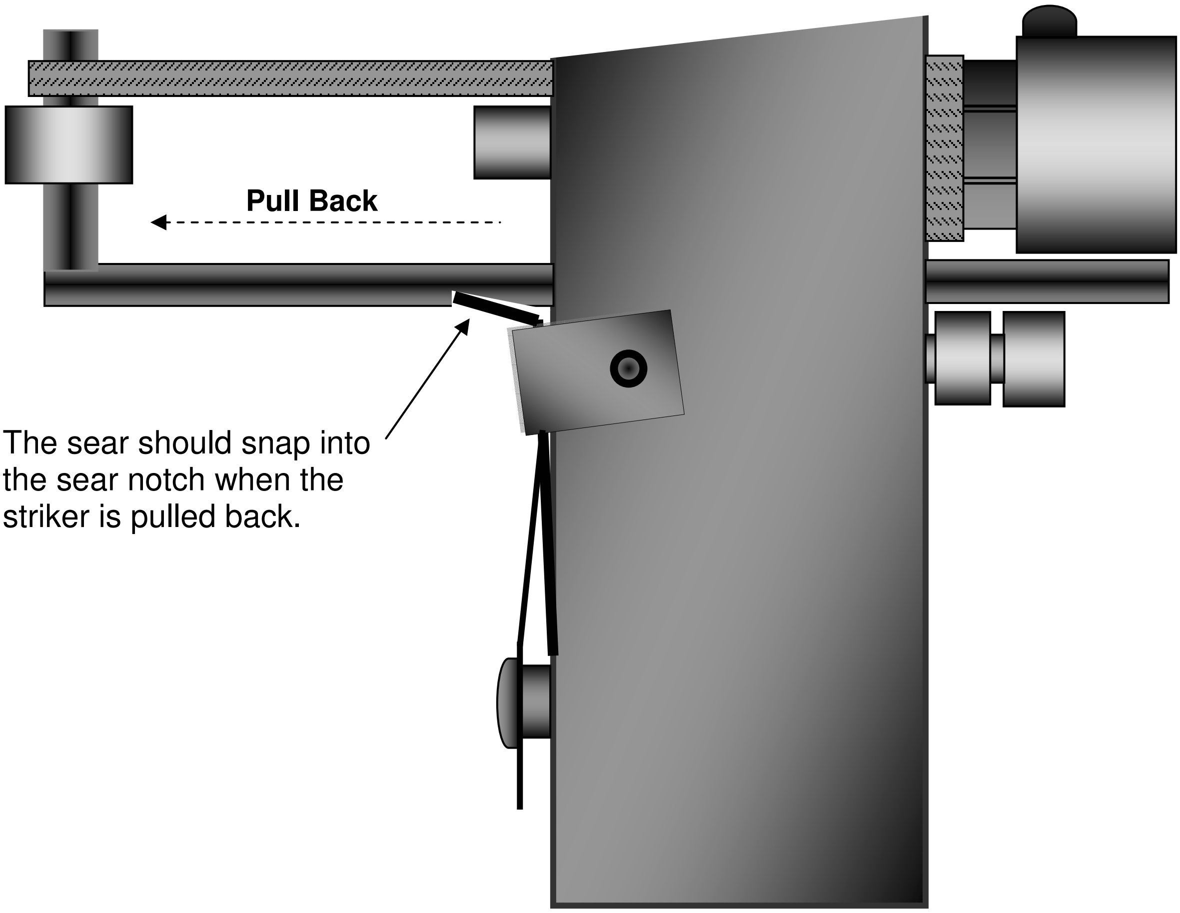
The illustration shows the fully assembled silenced pistol. Once the silencer is fitted it is only necessary to attach the striker 'spring' (**A**). The spring consists of a simple rubber band. Ideally the band should have a minimum width of around 3/8" and be about 3" in length. The band is looped around the barrel lock nut and then pulled back and looped around the striker, just above the collar. The band may be looped around the barrel nut several times if necessary, to shorten it's length and increase it's tension on the striker.

The rubber band serves two purposes. It supplies forward pressure to the striker to fire the pistol, and if fitted correctly, supplies downwards pressure to the breech block, effectively keeping the block and its firing pin in the correct firing position. See note three on Page 18 for alternative spring arrangement.

It is now only necessary to cut the sear notch into the underside of the striker, to allow the weapon to be cocked.

CUTTING THE SEAR NOTCH

The pistol is now almost ready to test fire; but before this can be done, it is necessary to cut the sear notch into the underside of the striker, to allow the pistol to be cocked. To mark the position of the sear notch, pull the striker back until the face of the collar is 2” from the contact face of the block and mark the underside of the striker. The sear notch is cut at this position. The striker should be removed from the pistol and the notch *carefully* cut to shape using a good quality fine tooth junior hacksaw blade to make the initial cut. A needle file is then used to increase the depth of the notch. The size of the notch in the illustration is *exaggerated* to illustrate its shape. The actual depth of the notch should be *shallow*, about 0.5mm in depth, to permit the sear to release cleanly when the trigger is pulled.



The pistol is shown here in the ready to fire position.

CASE HARDENING

Hardening the sear is a necessity due to the fact that the sear has been made from a simple section of mild steel. This material being too 'soft' in its as sold condition.
Mild steel cannot be hardened by the usual process of heating and quenching, as is normally applied to medium or high carbon steel, due to the fact that mild steel has a very low carbon content. However, it is quiet easy to 'Caseharden' a piece of mild steel with the use of 'Kasenit' casehardening compound, or similar product.
Casehardening is a way of adding a high carbon layer to the surface of a low carbon steel. When quenched, the carburised surface of the steel becomes extremely hard and wear resistant, while the inner core remains in its unchanged tough condition.
For the home gunsmith, casehardening is a very useful process.
Kasenit is available from any good model engineering shop and some good hardware stores.
Before we harden the sear it is important to ensure that the sear is the correct shape to release the striker.
Only the top section of the sear, that which comes into contact with the striker, requires hardening.

To caseharden the sear, the following will be required:-

1) **One tin of Kasenit.**
2) **Gas torch.**
3) **Pair of Pliers.**
4) **Bowl of water.**
5) **Fine grade sandpaper.**

To caseharden the sear proceed as follows;-

1) **Hold the sear in the pliers at the opposite end to be hardened.**
2) **Heat the end of the sear using the gas torch until it glows a cherry red colour (viewed in subdued light).**
3) **Dip the hot sear into the Kasenit powder for about ten seconds.**
4) **Repeat steps 1-3 again.**
5) **Heat the sear a third time and *immediately* quench in water.**
6) **The sear will now be glass hard.**
7) ***Lightly* polish the sear with a fine grad of sandpaper to remove any excess powder residue. Only polish lightly, we do not want to remove the hardened layer.**

The sear can now be re-fitted to the pistol.

LOADING AND SHOOTING

1) Turn striker to left or right and remove block.
2) Load cartridge and re-insert block.
3) Pull striker back to cock the pistol.
4) The Pistol is ready to fire.

NOTES:

1) The pistol illustrated in this document is designed for use with Sub-Sonic or standard velocity .22 rim-fire ammunition. Do not use high velocity ammunition.

2) The drawings of component parts are not necessarily proportionate or drawn to scale. Notwithstanding print errors, all measurements supplied are correct.

3) The rubber band used to power the striker may be replaced with an expansion spring if required. This is purely down to personal preference. If an expansion spring is used, it should be checked that the spring has been made from 20 gauge wire. The spring should be between 3/8" and ½" in diameter and 2 ½" to 3" in overall length (including loops). One end of the spring is looped over the silencer retaining screw and the other over the top of the striker. A shallow notch, 2 or 3mm in depth is cut into the striker just above the collar position, to prevent the spring from slipping off.

4) I have used both Imperial and Metric measurements in the above document. If a component measures ½" x ½" I will write it as such, rather than risk confusing some readers by writing the metric equivalent which is 12.70 x 12.70mm. Likewise, if a piece of steel 2.5mm thick is required, I will call it just that, rather than confusing things with a fraction of an inch measurement. If the reader doesn't understand what ½" or 2.5mm is, they had better take up golf, or some other equally futile and depressing hobby !

5) Only shoot at things that don't say "Ouch".

I would like to send my sincere thanks to Stanley Richardson and family from Columbus, Indiana, USA, for building the pistol shown in this document (from the above plans) and for loan of the photo's shown.

The material presented in this document is intended for the academic study of the futility of anti-gun laws only !

www.thehomegunsmith.com